

Summary

Inter-fuel Competition

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Analysis of factors determining the demand for energy resources, is a traditional sphere of applied economic research. The whole history of anthropogenic energy development is associated with the expansion of inter-fuel competition – with the implementation of the new energy sources, expanding the range of options available to mankind for satisfying its energy needs.

In recent decades, advances in the commercialization of a wide range of unconventional energy resources (deep and hard recoverable reserves of oil, different types of unconventional gas and biomass) and technologies – gas turbine, wind and nuclear power, solar panels, batteries, electricity, and others – not only greatly increase the resources of energy, but also expanded significantly the field of – fuel interchangeability.

Analysis of the structure of energy consumption by sector lead to the following conclusion: new technologies and national energy policies support the historical trend of the increasing inter-fuel competition and diversification of fuel mix in all consuming sectors. In the future, the available unconventional energy sources and new technologies can significantly increase both economically viable hydrocarbon reserves, their range of interchangeability (replacing oil by gas) and, most importantly, the limits of competitiveness with the other energy sources (including renewable) – mainly through the further electrification of all spheres of human activities. A new stage of the global energy development will see increased use of gas and electricity in the transportation sector, the further development of inter-fuel competition in the electricity generation and other sectors of consumption. It will mean increased diversification of the fuel basket and therefore sustainability of the global energy consumption.

Key words: inter-fuel competition; energy; energy markets; oil; gas; coal; electricity; nuclear; renewable; fuel mix; diversification; fuel and energy balance.

Economic Growth and Demand for Energy

Grigoriev L.M., Kurdin A.A.

The linkage between the economic growth and the dynamics of energy demand is important for a retrospective analysis of the global economy, as well as for a long-term forecasting. This work is devoted to the consideration of patterns and directions of this linkage, with due account for heterogeneity of economic systems in different regions of the world and for the influence of the global crisis. Despite the active examination of this linkage in literature, its results do not enable to make indisputable and unambiguous conclusions. The authors of this article

emphasize that structural shifts in the global economy and new trends in energy efficiency, energy supply and energy prices make it necessary to reassess the linkage between economic growth and energy consumption on a regular basis.

Key words: economic growth; energy consumption; energy efficiency.

Hydrocarbons Reserves in a Changing Institutional Environment

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Article analyses modern tendencies in oil-and-gas sector resources base development. Article shows not only high oil prices influenced growth of the oil-and-gas sector resources base (what gave chance for the transfer of uneconomic resources into profitable reserves), not only widespread of modern oil-and-gas production technologies (like horizontal drilling and hydrofracturing), but also (especially in US) extremely favorable institutional and organizational conditions. Access to modern technology in combination with skills and experience to use these technologies – are among most important features. All together changes not only organizational pattern of the oil-an-gas sector, but also principles and forms of the various companies interactions (especially between national and transnational oil-an-gas companies).

Key words: oil; gas; resources/reserves; depletion; technology; institutional conditions.

Natural Gas Pricing: Past, Present and Future

Stern J.P.

This article is covering a wide range of the principles and problems of formation natural gas prices. The author explores correlation between important factors: contracts, investment, peculiarities of public information. It dwells on the pricing of gas in the different regions' domestic market as well as at the world market. Pricing in the North American gas market and in the European continent are in the focus as an example of various nature pricing. At the end of the article the role of globalization is shown – how it plays in pricing and also the interaction of oil exporters and importers, as well as the future pricing operation arrangements.

Key words: natural gas; price; hubs; oil; region; contracts.

«Shale Gas Revolution» in U.S.: Internal and External Changes on Energy Markets

Melnikova S.I., Sorokin S.N.

The article tells about one of the basic economic theory – the theory of limited resources on one of the latest and well knows phenomena – US shale gas production. The technological

breakthrough, which is by all means a remarkable one, has significantly increased supplies in the US market, which not only caused system changes in the structure of primary and final consumption, but has also increased the competitiveness of the national economy in general. If current trends in shale gas and oil production will remain unchanged, US hydrocarbons exports can greatly influence the existing international trade flows and world markets. Authors also analyze one of the most uncertain issues in the modern shale gas production – economy and related instruments, that are widely used to hedge risks, which makes it possible to speak about the new shale hydrocarbons production economy.

Key words: shale gas; hedging; market oversupply; cross subsidies; North American LNG; exports.

Global Climate Change as a Challenge to World Economy and Economic Science

Makarov I.A.

For the last two decades global climate change has turn into one of the most urgent problems of world economy and world politics. The efficient ways and methods to cope with it are still to be elaborated. Search for and theoretical substantiation of such methods is the important objective of the economic science and this objective is far to be fulfilled to the moment. This paper reveals the key problems that economic science faces while studying and analyzing global climate change. These are the problem of economic valuation of future climate change impacts, the problem of choice of national climate policy instruments, and the problem of optimal form of international climate change regime. These problems are difficult to solve not only because of the complexity of interconnections between human economic activity and the state of environment but also because of the current inability of economic science to operate the categories which are traditionally out of the area of economics studies. Taking these categories into consideration within economic analysis and using the multidisciplinary vision is the key condition for the elaboration of efficient theoretical and practical approaches to cope with global climate change.

Key words: climate change; climate change impacts; valuation of climate change impacts; national climate regime; cap-and-trade; carbon tax; international climate change regime, Kyoto protocol.

Fresh Water Problem as a Structural Factor of World Economy

Likhacheva A.B.

Freshwater challenge has become an integral part of international political agenda since the last decade of the XX century. Huge amount of people who suffer from different types of water stress (over 1,1 bln.) brought global community to include Improved access to water and sanitation as one of 4 major components of Sustainable environment Millennium Development Goal (MDGs) of United Nations. On July 28, 2010, UN General Assembly added a right for water

in the list of basic human rights. Evolution of life standards in developed countries, rising concerns of poverty and inequality lead to rethinking of a wide range of global challenges, which were mostly ignored by world community before. Aggravation of water access problem, regional contradictions over water allocation and rising demand for higher life standards reflect both continuous escalation of water stress and higher ethics of global civil society towards life-style and inequality problems.

Before early 2000s, economic experts did not pay enough attention to water issues besides national water facilities, irrigation, hydro energy and urbanization problems. Beyond national frontiers water discourse resolved to draughts and deserts monitoring. All attention was concentrated on local measures aimed to prevent floods and draughts or manage sophisticated problems of allocation of scarce water resource in transboundary basins. As it seems today, water deficit has become a structural factor influencing world economic development. Access to clean water is in the focus of Sustainable development policy, water deficit becomes a constraint for economic growth in both developed and developing countries. At the same time world expenses for R&D in water management, investments in draughts and flood security are steadily growing. Energy efficiency in cities and especially megacities arises more heavily, state programs on modernization of irrigation systems multiply each year and arid regions in Asia, Europe and North America invest more and more in new desalination plants.

Key words: freshwater deficit; world economy; technologies; virtual water trade; virtual water; local water crises.

The Role of Global Food Problem in the Modern World Economy

Savelyeva A.V.

This article may be characterized as an analysis of the significance of global food problem on the current stage of world economy's development. In this work the term «global food problem» means unprecedented rise of world food price in the late XX – early XXI century, which make starve poor people in most countries. The author adduces the theoretical methods of approaching the global food problem, discloses the factors, which are the basis of this problem, describes the ways of mitigation of its impact on world economy. The article also contains the demarcation of the following terms: «food problem» and «food security». In the conclusion the author states that the main reason for the aggravation of the global food problem is a lack of investment to the applied agricultural sciences, which causes the inefficient use of resources. The conclusion also contains the ways of solving this problem.

Key words: global food market; global food problem; food security; food price index; the structure of food consumption.